C7 Culvert Design

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The 4% limit for wall compression reinforcement is a carryover from the culvert design program used in the office prior to the transition to LRFD.

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Partially revised: Methods Memo No. 28: Bent Bars in Flumes and Bell Joints 22 October 2001 (Class C lap lengths in this memo are from the AASHTO Standard Specifications. Due to different units in the AASHTO LRFD Specifications and associated constants, the lap length for #7 bars may be reduced by one inch. Also, a 6-inch spacing and a clear cover of 3 inches in the direction of spacing are acceptable under both specifications. The metric bar sizes in this memo are unavailable due to changes in the reinforcing bar industry.)

C7.2.4.5.4 Horizontally curved alignments

C7.2.4.5.4.1 Layout

C7.2.4.5.4.2 Transverse reinforcement

Methods Memo No. 31: Box Culverts (Detailing Bends)
30 August 2001 (Note that in-house programs SIGLBOX and MULTBOX no longer are available. The title for the last figure in the attachment has been corrected.)

C7.2.4.5.4.3 Longitudinal reinforcement for single barrels

C7.2.4.5.4.4 Longitudinal reinforcement for multiple barrels

C7.2.4.5.5 Wall penetrations

C7.2.4.5.5.1 Pipes

C7.2.4.5.5.2 Weep holes

C7.2.4.5.6 Settlement and camber

C7.2.4.6 Headwalls

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C7.2.4.7.1 Trash racks

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C7.2.4.7.3 Safety grates

C7.2.4.7.4 End walls

C7.2.4.7.5 Slope tapered inlets

C7.2.4.7.6 Drop inlets

C7.2.4.8 Outlets

C7.2.4.8.1 Flumes

Partially revised: Methods Memo No. 28: Bent Bars in Flumes and Bell Joints
22 October 2001 (Class C lap lengths in this memo are from the AASHTO Standard Specifications. Due to different units in the AASHTO LRFD Specifications and associated constants, the lap length for #7 bars may be reduced by one inch. Also, a 6-inch spacing and a clear cover of 3 inches in the direction of spacing are acceptable under both specifications. The metric bar sizes in this memo are unavailable due to changes in the reinforcing bar industry.)

C7.2.4.8.2 Scour floors

C7.2.4.8.3 Basins

C7.2.4.9 Extensions

C7.2.4.9.1 Connections

C7.2.4.9.2 Skewed reinforcement

C7.2.4.9.3 Bell joints

C7.2.4.9.4 Backfill

C7.2.4.10 Bridge replacements

C7.2.4.11 Miscellaneous

C7.2.4.11.1 Fish baffles and weirs

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C7.3 Precast concrete box

C7.3.1 Loads

C7.3.2 Load application

C7.3.3 Analysis and design

C7.3.4 Detailing

C7.4 Concrete pipe

C7.4.1 Loads

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C7.4.3 Analysis and design

C7.4.4 Detailing

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C7.4.4.3 Plan preparation

C7.4.4.4 General

C7.4.4.5 Pipes

C7.4.4.6 Headwalls

C7.4.4.7 Inlets

C7.4.4.8 Outlets

C7.4.4.8.1 Flumes

C7.4.4.9 Extensions

C7.4.4.10 Miscellaneous

C7.4.4.10.1 Pipe hand railings

Appendix for obsolete and superseded memos

6 October 2004 (The office no longer designs metric culverts. Article 4.1.6 refers to the previous culvert manual section that has been superseded.)

Obsolete: Methods Memo No. 125: New Issue Precast Culvert Standards and Plan Development 6 December 2005 (The intended-to-be-attached submittal sheets and updated sheets are available on the office web site, but with a new address: www.iowadot.gov/bridge/v8preculstd.htm. See MM No. 224 for amendment.)

Obsolete: Methods Memo No. 224: Amendment to MM No. 125 July 2010